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2 What is claimed is:

3 1. A DNA fragment which encodes a GP Ebola protein,  
4 said DNA fragment comprising the sequence specified in  
5 SEQ ID NO:1, or a polynucleotide fragment comprising  
6 at least 15 nucleotides.

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8 2. A DNA fragment which encodes a NP Ebola protein,  
9 said DNA fragment comprising the sequence specified in  
10 SEQ ID NO:2, or a polynucleotide fragment comprising  
11 at least 15 nucleotides.

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13 3. A DNA fragment which encodes a VP24 Ebola protein,  
14 said DNA fragment comprising the sequence specified in  
15 SEQ ID NO:3, or a polynucleotide fragment comprising  
16 at least 15 nucleotides.

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18 4. A DNA fragment which encodes a VP30 Ebola protein,  
19 said DNA fragment comprising the sequence specified in  
20 any of SEQ ID NO:4 and SEQ ID NO:7, or a  
21 polynucleotide fragment comprising at least 15  
22 nucleotides.

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24 5. A DNA fragment which encodes a VP35 Ebola protein,  
25 said DNA fragment comprising the sequence specified in  
26 SEQ ID NO:5, or a polynucleotide fragment comprising  
27 at least 15 nucleotides.

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29 6. A DNA fragment which encodes a VP40 Ebola protein,  
30 said DNA fragment comprising the sequence specified in  
31 SEQ ID NO:6, or a polynucleotide fragment comprising  
32 at least 15 nucleotides.

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34 7. A DNA fragment which encodes a GP Ebola protein  
35 said DNA fragment comprising a DNA sequence encoding  
36 at least 5 amino acids specified in SEQ ID NO:17 or a  
37 conservative substitution thereof.

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- 2 8. A DNA fragment which encodes a NP Ebola protein
- 3 said DNA fragment comprising a DNA sequence encoding
- 4 at least 5 amino acids specified in SEQ ID NO:18 or a
- 5 conservative substitution thereof.
- 6
- 7 9. A DNA fragment which encodes a VP24 Ebola protein
- 8 said DNA fragment comprising a DNA sequence encoding
- 9 at least 5 amino acids specified in SEQ ID NO:19 or a
- 10 conservative substitution thereof.
- 11
- 12 10. A DNA fragment which encodes a VP30 Ebola protein
- 13 said DNA fragment comprising a DNA sequence encoding
- 14 at least 5 amino acids specified in any of SEQ ID
- 15 NO:20 and SEQ ID NO:23 or a conservative substitution
- 16 thereof.
- 17
- 18 11. A DNA fragment which encodes a VP35 Ebola protein
- 19 said DNA fragment comprising a DNA sequence encoding
- 20 at least 5 amino acids specified in SEQ ID NO:21 or a
- 21 conservative substitution thereof.
- 22
- 23 12. A DNA fragment which encodes a VP40 Ebola protein
- 24 said DNA fragment comprising a DNA sequence encoding
- 25 at least 5 amino acids specified in SEQ ID NO:22 or a
- 26 conservative substitution thereof.
- 27
- 28 13. A recombinant DNA construct comprising:
- 29 (i) a vector, and
- 30 (ii) at least one of the Ebola virus DNA
- 31 fragments chosen from the group consisting of SEQ ID
- 32 NO:1, 2, 3, 4, 5, 6 and 7 or a fragment thereof
- 33 comprising at least 15 nucleotides.
- 34
- 35 14. A recombinant DNA construct comprising:
- 36 (i) a vector, and
- 37 (ii) at least one of the Ebola virus DNA
- 38 fragments chosen from the group consisting of SEQ ID

1 NO: 17, 18, 19, 20, 21, 22, 23, 24 and 25 or a  
2 conservative substitution thereof.

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4 15. The recombinant DNA construct of claim 13 wherein  
5 said DNA fragment induces a cytotoxic T lymphocyte,  
6 response or antibody response.

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8 16. The recombinant DNA construct of claim 14 wherein  
9 said DNA fragment induces a cytotoxic T lymphocyte  
10 response or antibody response.

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12 17. A recombinant DNA construct according to claim 13  
13 wherein said vector is an expression vector.

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15 18. A recombinant DNA construct according to claim 13  
16 wherein said vector is a prokaryotic vector.

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18 19. A recombinant DNA construct according to claim 13  
19 wherein said vector is a eukaryotic vector.

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21 20. A recombinant DNA construct according to claim 14  
22 wherein said vector is an expression vector.

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24 21. A recombinant DNA construct according to claim 14  
25 wherein said vector is a prokaryotic vector.

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27 22. A recombinant DNA construct according to claim 14  
28 wherein said vector is a eukaryotic vector.

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30 23. The recombinant DNA construct of claim 17 wherein  
31 said vector is a VEE virus replicon vector.

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33 24. The recombinant DNA construct of claim 20 wherein  
34 said vector is a VEE virus replicon vector.

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36 25. The recombinant DNA construct according to claim  
37 23 wherein said Ebola virus DNA fragments are from  
38 Ebola Zaire 1976.

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- 2 26. The recombinant DNA construct according to claim
- 3 25 wherein said construct is VRepEboVP24.
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- 5 27. The recombinant DNA construct according to claim
- 6 25 wherein said construct is VRepEboVP30.
- 7
- 8 28. The recombinant DNA construct according to claim
- 9 25 wherein said construct is VRepEboVP35.
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- 11 29. The recombinant DNA construct according to claim
- 12 25 wherein said construct is VRepEboVP40.
- 13
- 14 30. The recombinant DNA construct according to claim
- 15 25 wherein said construct is for VRepEboNP.
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- 17 31. The recombinant DNA construct according to claim
- 18 25 wherein said construct is for VRepEboGP.
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- 20 32. The recombinant DNA construct according to claim
- 21 25 wherein said construct is for VRepEboVP30(#2).
- 22
- 23 33. Self replicating RNA produced from a construct
- 24 chosen from the group consisting of EboVP24ReP,
- 25 EboVP30ReP, EboVP35ReP, EboVP40ReP, EboVPNPReP,
- 26 EboVPGPreP, and EboVP30ReP(#2).
- 27
- 28 34. Infectious alphavirus particles produced from
- 29 packaging the self replicating RNA of claim 33.
- 30
- 31 35. A pharmaceutical composition comprising infectious
- 32 alphavirus particles according to claim 34 in an
- 33 effective immunogenic amount in a pharmaceutically
- 34 acceptable carrier and/or adjuvant.
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- 36 36. A host cell transformed with a recombinant DNA
- 37 construct according to claim 13.

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37. A host cell transformed with a recombinant DNA construct according to claim 14.

38. A host cell according to claim 36 wherein said host cell is prokaryotic.

39. A host cell according to claim 36 wherein said host cell is eukaryotic.

40. A host cell according to claim 37 wherein said host cell is prokaryotic.

41. A host cell according to claim 37 wherein said host cell is eukaryotic.

42. A method for producing Ebola virus proteins comprising culturing the cells according to claim 36 under conditions such that said DNA fragment is expressed and said Ebola protein is produced.

43. A method for producing Ebola virus proteins comprising culturing the cells according to claim 37 under conditions such that said DNA fragment is expressed and said Ebola protein is produced.

44. A method for producing Ebola virus proteins comprising culturing the cells according to claim 38 under conditions such that said DNA fragment is expressed and said Ebola protein is produced.

45. A method for producing Ebola virus proteins comprising culturing the cells according to claim 39 under conditions such that said DNA fragment is expressed and said Ebola protein is produced.

- 1 46. An isolated and purified Ebola GP protein  
2 specified in SEQ ID NO:17 and conservative  
3 substitutions thereof, or an immunologically  
4 identifiable portion thereof.  
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- 6 47. An isolated and purified Ebola NP protein  
7 specified in SEQ ID NO:18 and conservative  
8 substitutions thereof or an immunologically  
9 identifiable portion thereof.  
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- 11 48. An isolated and purified Ebola VP24 protein  
12 specified in SEQ ID NO:19 and conservative  
13 substitutions thereof or an immunologically  
14 identifiable portion thereof.  
15
- 16 49. An isolated and purified Ebola VP30 protein  
17 specified in any of SEQ ID NO:20 and SEQ ID NO:23 and  
18 conservative substitutions thereof or an  
19 immunologically identifiable portion thereof.  
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- 21 50. An isolated and purified Ebola VP35 protein  
22 specified in SEQ ID NO:21 and conservative  
23 substitutions thereof or an immunologically  
24 identifiable portion thereof.  
25
- 26 51. An isolated and purified Ebola VP40 protein  
27 specified in SEQ ID NO:22 and conservative  
28 substitutions thereof or an immunologically  
29 identifiable portion thereof.  
30
- 31 52. An antibody to a peptide encoded by the sequence  
32 specified in SEQ ID NO:17, 18, 19, 20, 21, 22, 23, 24,  
33 and 25.  
34
- 35 53. A method for detecting Ebola virus infection  
36 comprising contacting a sample from a subject  
37 suspected of having Ebola virus infection with a  
38 antibody according to claim 52 and detecting the

1 presence or absence by detecting the presence or  
2 absence of a complex formed between the Ebola protein  
3 and antibodies specific therefor.

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5 54. A method for detecting the presence or absence of  
6 Ebola virus GP RNA in a sample using the polymerase  
7 chain reaction using primers for Ebola GP nucleic acid  
8 sequence specified in SEQ ID NO:1 for GP.

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10 55. An Ebola infection diagnostic kit comprising at  
11 least 12 consecutive nucleotides of SEQ ID NO:1  
12 specific for the amplification of DNA or RNA of Ebola  
13 virus in a sample using the polymerase chain reaction  
14 and ancillary reagents suitable for use in such a  
15 reaction for detecting the presence or absence of  
16 Ebola virus DNA or RNA in a sample.

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18 56. A vaccine for Ebola comprising alphavirus  
19 particles of claim 34.

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21 57. A method for the diagnosis of Ebola virus  
22 infection comprising the steps of:

23 (i) contacting a sample from an individual  
24 suspected of having Ebola virus infection with an  
25 antibody to Ebola proteins according to claim 52; and

26 (ii) detecting the presence or absence of Ebola  
27 virus infection by detecting the presence or absence  
28 of a complex formed between Ebola proteins and  
29 antibodies specific therefor.

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31 58. A pharmaceutical composition comprising the self  
32 replicating RNA of claim 33 in an effective immunogenic  
33 amount in a pharmaceutically acceptable carrier and/or  
34 adjuvant.

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36 59. A pharmaceutical composition comprising one or more  
37 recombinant DNA constructs chosen from the group  
38 consisting of VRepEboVP24, VRepEboVP30, VRepEboVP35,

1 VRepEboVP40, VRepEboNP, VRepEboGP, and VRepEboVP30(#2),  
2 in a pharmaceutically acceptable amount, in a  
3 pharmaceutically acceptable carrier and/or adjuvant.  
4

5 60. A pharmaceutical composition comprising comprising a  
6 peptide encoded by any of SEQ ID NO:24 and SEQ ID NO:25,  
7 in a pharmaceutically acceptable amount, in a  
8 pharmaceutically acceptable carrier and/or adjuvant.  
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